

> STARPOINT <

VRS with pipe thread

according DIN EN ISO 228-1



Safety instructions

This safety instruction has to be kept on file for the whole lifetime of the product and forwarded with the product.

TRANSLATION OF THE ORIGINAL SAFETY INSTRUCTION



TYP 1
(with adapter)



TYP 2
(without adapter)



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STARPOINT VRS with pipe thread
 according to DIN EN ISO 228-1

EG-Konformitätserklärung

entsprechend der EG-Maschinenrichtlinie 2006/42/EG, Anhang II A und ihren Änderungen

Hersteller: **RUD Ketten
Rieger & Dietz GmbH u. Co. KG**
Friedensinsel
73432 Aalen

Hiermit erklären wir, dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konzipierung und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Maschinenrichtlinie 2006/42/EG sowie den unten aufgeführten harmonisierten und nationalen Normen sowie technischen Spezifikationen entspricht.
Bei einer nicht mit uns abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.

Produktbezeichnung: StarPoint Ringschraube
VRS

Folgende harmonisierten Normen wurden angewandt:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN ISO 12100 : 2011-03</u>
_____	_____
_____	_____

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:

<u>DGVU-R 109-017 : 2020-12</u>	_____
_____	_____
_____	_____

Für die Zusammenstellung der Konformitätsdokumentation bevollmächtigte Person:
Michael Betzler, RUD Ketten, 73432 Aalen

Aalen, den 15.04.2021 Hermann Kolb, Bereichsleitung MA *Hermann Kolb*

Name, Funktion und Unterschrift Verantwortlicher

EC-Declaration of conformity

According to the EC-Machinery Directive 2006/42/EC, annex II A and amendments

Manufacturer: **RUD Ketten
Rieger & Dietz GmbH u. Co. KG**
Friedensinsel
73432 Aalen

We hereby declare that the equipment sold by us because of its design and construction, as mentioned below, corresponds to the appropriate, basic requirements of safety and health of the corresponding EC-Machinery Directive 2006/42/EC as well as to the below mentioned harmonized and national norms as well as technical specifications.
In case of any modification of the equipment, not being agreed upon with us, this declaration becomes invalid.

Product name: STARPOINT eye bolt
VRS

The following harmonized norms were applied:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN ISO 12100 : 2011-03</u>
_____	_____
_____	_____

The following national norms and technical specifications were applied:

<u>DGVU-R 109-017 : 2020-12</u>	_____
_____	_____
_____	_____

Authorized person for the configuration of the declaration documents:
Michael Betzler, RUD Ketten, 73432 Aalen

Aalen, den 15.04.2021 Hermann Kolb, Bereichsleitung MA *Hermann Kolb*

Name, function and signature of the responsible person

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Carefully read the operating instructions before using the boltable lifting points VRS with pipe thread. Ensure that you have understood all the contents.

Non-observation of the instructions can lead to injuries or damage and will invalidate the guarantee.

1 Safety instructions



WARNING

Incorrectly mounted or damaged VRS with pipe thread and improper use can lead to injuries and damage to objects after a fall. Check all VRS with pipe thread carefully every time before use.

- Withdraw all body parts (fingers, hands, arms etc.) from the danger zone during the lifting process (risk of crushing).
- The VRS with pipe thread may only be used by authorised and instructed persons in compliance with the DGUV Regulations chapter 109-017 and in compliance with any valid national regulations if used outside Germany.
- The WLL stated on the lifting point must not be exceeded (except vertical load see *Table 2*).
- The VRS with pipe thread has to be rotatable by 360° when securely screwed in.



NOTE

For the VRS-F type, the star profile wrench must be disengaged.

- The VRS with pipe thread is not suitable for turning movements under load.
- No technical modifications must be made to the VRS with pipe thread.
- No persons are allowed in the danger zone.

- Standing below suspended loads is prohibited.
- Jerky lifting (strong impacts) must be avoided.
- Ensure a stable position of the load during lifting. Swinging must be avoided.
- Damaged or worn VRS with pipe thread must not be used.

2 Intended use

The VRS with pipe thread may only be used for attachment to the load or to load-handling equipment.

They are designed for suspending lifting means.

The VRS with pipe thread can also be used as a lashing point to suspend lashing equipment.

The VRS with pipe thread may only be used for the purposes described here.

3 Instructions for mounting and use

3.1 General information

- Temperature suitability: due to installed bolts in the VRS with pipe thread, the WLL must be reduced accordingly to the strength class of the bolts as follows:

-40°C to 100°C → no reduction

100°C to 200°C minus 15 % (212 to 392°F)

200°C to 250°C minus 20 % (392 to 482°F)

250°C to 350°C minus 25 % (482 to 662°F)

Temperatures exceeding 350°C (662°F) are not permissible!

- The VRS with pipe thread must not be exposed to aggressive chemicals, acids and their vapours.
- Clearly identify the attachment place for the VRS with pipe thread by means of contrasting colour markings.
- **Variants VRS with pipe thread:**
 - Type 1 (with adapter, see *Pic. 5*)
 - Type 2 (without adapter - identical in construction to the series VRS/VRS-F, see *Pic. 6 and Pic. 7*)
- If the VRS with pipe thread is used only for lashing purposes, the WLL value can be doubled:
LC = permissible lashing force = 2 x WLL



NOTE

If the VRS with pipe thread as lashing point is loaded with a force exceeding WLL, it must no longer be used as a lifting point afterwards!

If the VRS with pipe thread as a lashing point is loaded with a force only up to the WLL, it can still be used as a lifting point.

3.2 Notes on assembly

The following always applies:

- The attachment point so that the exerted forces can be absorbed by the base material without deformation.

This applies in particular when using the lifting point in conjunction with weld-in sockets.

Lengths of thread engagement derived by the employers' liability insurance association (based on the thread undercut):

1.5 x M in steel (minimum quality S235JR [1.0037])

1.5 x M in cast iron (e.g. GG 25)

Moreover, the employers' liability insurance association recommends as minimum lengths of thread engagement:

2 x M in aluminium alloys

2.5 x M in light metals of low strength (M = thread size, e.g. G1")

- In the case of light metals, non-ferrous metals and grey cast iron, the thread arrangement must be selected so that the thread load-bearing capacity corresponds to the requirements of the respective base material.
- Select the position of the VRS with pipe thread so that impermissible loads, such as twisting or turning of the load, can be avoided.
 - Single strand attachment:** vertically above the load's centre of gravity
 - Double strand attachment:** above and on both sides of the load's centre of gravity
 - Three or four-strand attachment:** evenly in one plane around the load's centre of gravity.
- Symmetry of load:
Determine the required WLL of the individual RUD lifting point for symmetrical loading according to the following physical formula context:

$$W_{LL} = \frac{G}{n \times \cos \beta}$$

W_{LL} = req. WLL of the lifting point / single strand (kg)
 G = Load weight (kg)
 n = Number of supporting strands
 β = Inclination angle of the individual strands

Number of supporting strands is:

	Symmetry
Double strand	2
Three/four-strand	3

Table 1: Supporting strands (see also Table 2)



NOTE

At unsymmetrical loads, even if several lifting points are used, the WLL of a single lifting point must be at least equal to the load weight or ask the manufacturer.

- An even bolting surface (ØE, see. Table 3) with a right-angled threaded borehole must be guaranteed. The threaded version must be designed according to DIN 76 (counterbore diameter at the max. 1.05 x d). Threaded boreholes must be deep enough to allow the contact surface of the lifting point to lie flat.

- The VRS has to be rotatable by 360° when securely screwed in.



NOTE

For the VRS-F type, the star profile wrench must be disengaged.

Please pay attention to the following:

- For a **single lift with type 1 (with adapter)**, hand-tightening with a spanner up to the adapter contact surface is sufficient. For a **single lift with type 2 (without adapter)**, hand-tightening with a star profile key up to the bolt contact surface is sufficient.



WARNING

The prescribed torque moment must not be exceeded!



NOTE

The star profile wrenches can be retrofitted. Wrench for retrofitting see Table 4.

- If the VRS with pipe thread is to remain permanently on the load, it must be tightened with the tightening torque (± 10 %) depending on version, according to Table 3.



NOTE

If a torque wrench is used, an offset socket wrench is available (see Table 4).

- In case of jolting WLL or vibration, in particular for through bolt connections with nuts, there may be unintended loosening.

Securing options: keeping to the tightening torque or use liquid thread protection such a Loctite or WEICONLOCK (adjusted to the application case, pay attention to manufacturer's instructions).

- Then check that everything has been mounted correctly (see Section 4 Inspection / Repair / Disposal).

3.3 Notes on use

3.3.1 General information on use

- Before use (e.g. by the striker), inspect the entire lifting point (secure bolt fit, strong corrosion, cracks in supporting parts, deformations). See section 4 Inspection / Repair / Disposal.

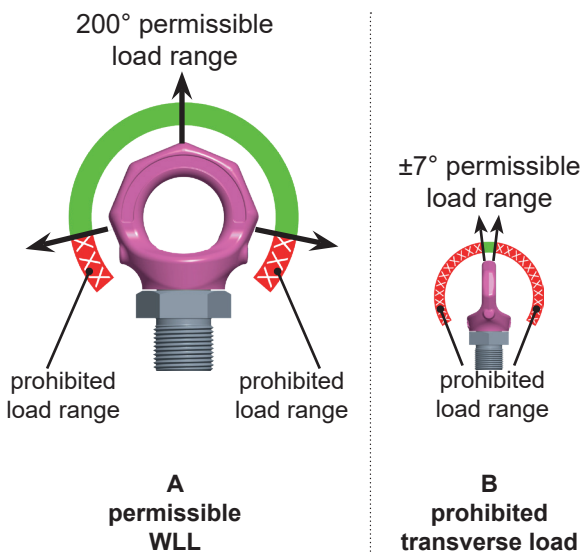


WARNING

Incorrectly mounted or damaged VRS with pipe thread and improper use can lead to personal injuries and damage to objects after a fall.

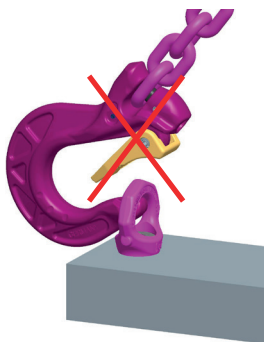
Check all VRS with pipe thread carefully every time before use.

- RUD components are designed according to DIN EN 818 and DIN EN 1677 for a dynamic WLL of 20,000 load cycles.
 - Please note that during one lifting process, there might be several stress cycles.
 - Please note that due to the high dynamic load with high numbers of stress cycles, there is the risk of damage to the product.
 - The BG/DGUV recommends: at high dynamic WLL with high stress cycles (permanent operation), the working load must be reduced according to the engine group 1Bm (M3 according to DIN EN 818-7). Use a lifting point with a higher WLL.
- When engaging and disengaging the lifting means (lifting chain, round sling, wire rope) no crushing, shearing, catching or impact points may be created.
- Prevent any damage to the lifting means on sharp-edged WLL.
- Before suspending the lifting means, set the VRS with pipe thread in direction of force (see *Pic. 1*).



Pic. 1:
A: Admissible load direction at load ring plane
B: Prohibited transversal load to the load ring plane

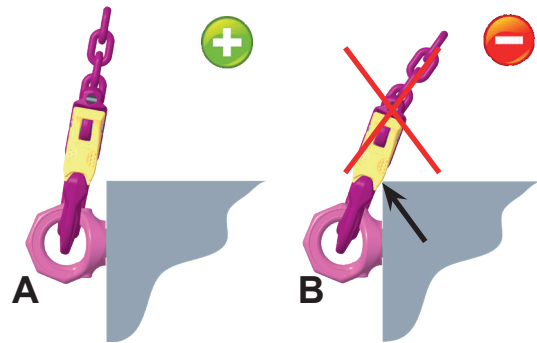
- Please note that the lifting means must be able to move freely in the VRS with pipe thread.



Pic. 2: Only use appropriate lifting means for hinging in the VRS with pipe thread

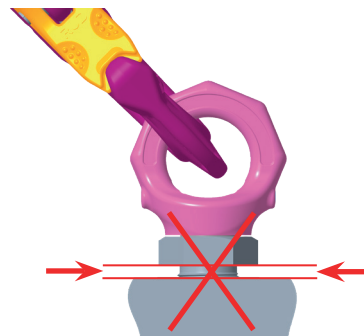
- The lifting means must not be exposed to bending

load!



Pic. 3:
A: Admissible load area
B: Prohibited positioning or placing on edges

- Always bolt the lifting point in fully.



Pic. 4: The lifting point must be fully bolted in.

4 Inspection / Repair / Disposal

4.1 Notes on regular checks

The operator must determine and specify the nature and scope of the required tests as well as the periods of repeating tests by means of a risk assessment (see sections 4.2 and 4.3).

The continuous suitability of the lifting point must be checked at least 1x per year by an expert. Depending on the application conditions, e.g. when used frequently or if there is a higher level of wear occurrence or corrosion, it may be necessary to carry out inspections at intervals of less than a year. This inspection is also absolutely necessary after damage and special incidents. The inspection cycles must be specified by the operator.

4.2 Test criteria for the regular visual inspection by the user

- Correct bolt size and bolt-in length
- ensure bolts are secure → Check the tightening torque
- Lifting point is complete
- Complete, legible WLL information and manufacturer symbol
- Deformation on supporting parts such as adapter, ring and bolt
- Mechanical damage such as large notches, in particular in areas subject to tensile loads
- easy and jerk-free rotating of the ring around the bolt axis must be ensured.

4.3 Additional test criteria for the expert / repairer

- Cross-section changes due to wear occurrence > 10%
- Heavy corrosion
- Function and damage of the adapter, bolt and bolt thread.
- Additional inspections may be necessary, depending on the result of the risk assessment (e.g. check for cracks in load-bearing parts).

4.4 Disposal

Dispose of the discarded components / accessories or packaging in line with local regulations.

5 Tables

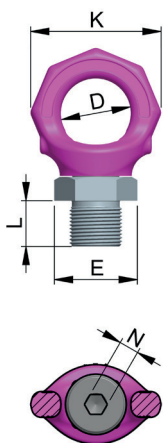
5.1 Working load limit

Method of lift										
Number of legs	1	1	2	2	2	2	2	3 / 4	3 / 4	3 / 4
Angle of inclination β	0°-7°	90°	0°-7°	90°	0-45°	>45-60°	Unsymm.	0-45°	>45-60°	Unsymm.
factor		1		2	1.4	1	1	2.1	1.5	1
Safety factor 4:1	for the max. total load weight >G< in metric tons. tightened and adjusted to force direction									
G 1/4"	2	0.75	4	1.5	1	0.75	0.75	1.57	1.12	0.75
G 3/8"	1	0.3	2	0.6	0.42	0.3	0.3	0.63	0.45	0.3
G 1/2"	2	0.75	4	1.5	1	0.75	0.75	1.57	1.12	0.75
G 3/4"										
G 1"	4	1.5	8	3	2.1	1.5	1.5	3.15	2.25	1.5
G 1 1/4"										
G 1 1/2"	32	12	64	24	16.8	12	12	25.2	18	12
G 2" (1.5 t)	4	1.5	8	3	2.1	1.5	1.5	3.15	2.25	1.5
G 2" (2.3 t)	6	2.3	12	4.6	3.22	2.3	2.3	4.83	3.45	2.3
G 3"	4	1.5	8	3	2.1	1.5	1.5	3.15	2.25	1.5
Safety factor 4:1	for the max. total load weight >G< in lbs. tightened and adjusted to force direction									
G 1/4"	4400	1650	8800	3300	2330	1650	1650	3500	2470	1650
G 3/8"	2200	660	4400	1320	930	660	660	1400	990	660
G 1/2"	4400	1650	8800	3300	2330	1650	1650	3500	2470	1650
G 3/4"										
G 1"	8820	3300	17640	6600	4660	3300	3300	7000	4950	3300
G 1 1/4"										
G 1 1/2"	70540	26450	141100	52910	37000	26450	26450	55500	39680	26450
G 2" (1.5 t)	8820	3300	17640	6600	4660	3300	3300	7000	4950	3300
G 2" (2.3 t)	13230	5070	26460	10140	7170	5070	5070	10750	7600	5070
G 3"	8820	3300	17640	6600	4660	3300	3300	7000	4950	3300
	At a lift with one strand and two parallel strands where the inclination angles are at the max. $\pm 7^\circ$, the lifting methode can be assumed as a vertical lift.				When lifting with two, three or four leg lifting means, inclination angles of less than 15° shall be avoided, if possible (Risk of instability).					

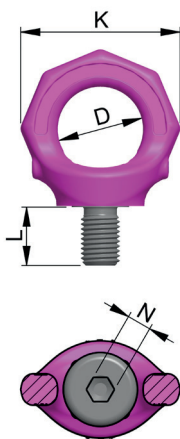
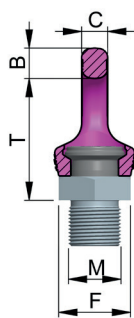
Table 2:

Working load limit in metric tons (top) and in lbs (bottom)

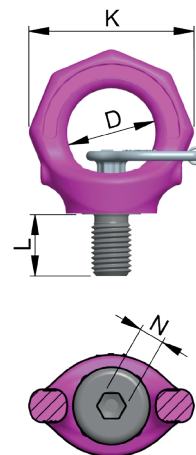
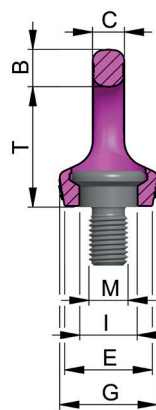
Subject to technical modifications



Pic. 5: VRS with pipe thread Type 1 (with adapter)



Pic. 6: VRS with pipe thread Type 2 (without adapter) without key



Pic. 7: VRS-F with pipe thread Type 2 (without adapter) with key

5.2 VRS-F with key / VRS without key - pipe inch thread ISO 228-1

VRS-F / VRS	WLL [t]	weight VRS-F/ VRS [kg/pc.]	T [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	K [mm]	L [mm]	M	N [mm]	torque [Nm]	Type	Ref.-No.	
																with key	without key
G 1/4"	0.75	0.2	42	13	10	30	30	-	34	56	18	G 1/4"	8	25	2	-	7999269
G 3/8"	0.3	0.2	45	11	9	25	35	30	-	47	24	G 3/8"	6	25	1	-	7911864
G 1/2"	0.75	0.3	52	13	10	30	35	30	-	56	20	G 1/2"	8	25	1	-	7998682
G 3/4"	1.5	0.53	61	15	13	35	42	36	-	65	23	G 3/4"	10	60	1	-	7998880
G 1"	1.5	0.5	61	15	13	35	47	41	-	65	32	G 1"	10	60	1	-	7999163
G 1 1/4"	1.5	1	64	15	13	35	58	50	-	65	40	G 1 1/4"	10	60	1	-	7903732
G 1 1/2"	12	7.5	138	42	38	96	101	-	128	179	72	G 1 1/2"	27	1400	2	7901254	-
G 2" (1.5 t)	1.5	1.5	64	15	13	35	81	70	-	65	45	G 2"	10	100	1	-	7999164
G 2" (2.3 t)	2.3	1.9	73	17	16	40	81	70	-	76	45	G 2"	12	115	1	-	7900433
G 3"	1.5	3.3	64	15	13	35	115	100	-	65	45	G 3"	10	100	1	-	7905324

Table 3: dimensioning

subject to technical modifications

5.3 Overview of keys for VRS

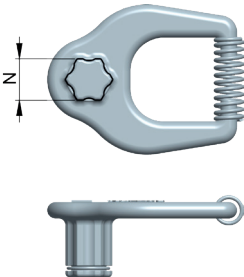
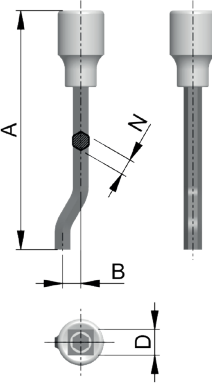
Type	weight [kg/pc.]	A [mm]	B [mm]	D [mm]	N [mm]	suitable for VRS		Ref.-No.	
						WLL [t]	thread (dimension M)		
Star key metric (suitable for retrofitting)									
	Star key metric SW6	0.02	--	--	--	6	0.3	G3/8"	7983986
	Star key metric SW8	0.02	--	--	--	8	0.75	G1/4" G1/2"	7905453
	Star key metric SW10	0.03	--	--	--	10	1.5	G3/4"; G1"; G1 1/4"; G2" (1.5 t); G3"	7903254
	Star key metric SW12	0.04	--	--	--	12	2.3	G2" (2.3 t)	7904282
	Star key metric SW27	0.4	--	--	--	27	12	G1 1/2"	7904287
socket wrench metric									
	socket wrench metric SW6	0.09	118	7.5	1/2"	6	0.3	G3/8"	7997749
	socket wrench metric SW8	0.11	118	9	1/2"	8	0.75	G1/4" G1/2"	7997750
	socket wrench metric SW10	0.15	138	12	1/2"	10	1.5	G3/4"; G1"; G1 1/4"; G2" (1.5 t); G3"	7997751
	socket wrench metric SW12	0.2	137	14	1/2"	12	2.3	G2" (2.3 t)	7997752
	socket wrench metric SW27	2	304	33	1"	27	12	G1 1/2"	7902081

Table 4: wrench overview

Subject to technical modifications